

Amendment to the Claims:

This listing of claims will replace all versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of preparing a reprogrammed diploid mammalian cell which method includes

providing

one of a group consisting of a diploid mammalian donor cell and a diploid mammalian donor nucleus, and

a mammalian recipient cell, wherein the one of a group consisting of a mammalian donor cell and a mammalian donor nucleus is a somatic cell or a nucleus derived therefrom;

introducing the one of a group consisting of a mammalian donor cell and a mammalian donor nucleus into the mammalian recipient cell to produce an aneuploid cell;

maintaining the aneuploid cell in a suitable environment for a period sufficient to allow the donor nucleus to be reprogrammed;

optionally subjecting the aneuploid cell to an activation step; and

subsequent to maintaining the aneuploid cell in the suitable environment, treating said reprogrammed aneuploid cell so as to generate a reprogrammed diploid mammalian cell from said reprogrammed aneuploid cell by removal or destruction of the mammalian recipient cell nucleus, pronucleus, metaphase plate, chromatin, chromosomes or nuclear DNA from said reprogrammed aneuploid cell.

2. (Currently Amended) A method according to Claim 1, wherein the mammalian recipient cell is an oocyte, zygote, or embryonic blastomere.

3. (Original) A method according to Claim 2, wherein the oocyte is a metaphase II oocyte.

4. (Currently Amended) A method according to Claim 1, wherein the mammalian recipient cell is an embryonic stem cell, embryonic germ cell, primordial germ cell, embryonal carcinoma cell or other pluripotent stem cell.

5. (Canceled)

6. (Currently Amended) A method according to Claim 1, wherein the mammalian donor nucleus or cell is a cumulus cell or nucleus derived therefrom.

7. (Canceled)

8. (Canceled)

9. (Currently Amended) A method according to Claim 1, wherein the mammalian donor nucleus or cell is a somatic stem cell or nucleus derived therefrom.

10. (Currently Amended) A method according to Claim 1, wherein the mammalian donor nucleus or cell is transferred to the recipient cell by piezo-assisted micromanipulation.

11. (Currently Amended) A method according to Claim 1, wherein nucleus or nuclear DNA of the mammalian recipient cell is removed or destroyed prior to division of the aneuploid cell.

12. (Currently Amended) A method according to Claim 1 wherein the mammalian donor cell is reprogrammed to an embryonic cell.

13. (Currently Amended) A method according to Claim 12 wherein the reprogrammed mammalian cell is capable of forming ~~an animal~~ a mammalian embryo containing pluripotent embryonic cells.

14. (Original) A method according to Claim 13, wherein a pluripotent stem cell is derived from the pluripotent embryo cells.

15. (Original) A method according to Claim 14, wherein an embryonic stem cell line is produced.

16. (Withdrawn) A method of preparing a reprogrammed genetically modified diploid cell, said method including

providing

a diploid donor cell or diploid donor nucleus which donor cell or nucleus has been genetically modified to eliminate or reduce an undesirable activity or to provide for or increase a desirable activity, and

a recipient cell;

introducing the donor cell or nucleus into the recipient cell to produce an aneuploid cell;

maintaining the aneuploid cell in a suitable environment for a period sufficient to allow the donor nucleus to be reprogrammed;

optionally subjecting the aneuploid cell to an activation step; and

generating a reprogrammed genetically modified diploid cell from said reprogrammed aneuploid cell by substantial removal or substantial destruction of the recipient cell nucleus, pronucleus, metaphase plate, chromatin, chromosomes or nuclear DNA from said reprogrammed aneuploid cell.

17. (Withdrawn) A method of preparing a reprogrammed genetically abnormal cell, said method including

providing

a diploid donor cell or diploid donor nucleus which donor cell or nucleus is derived from a genetically abnormal cell, such as a cell from an animal or person with a genetic disease, and

a recipient cell;

introducing the donor cell or nucleus into the recipient cell to produce an aneuploid cell;

maintaining the aneuploid cell in a suitable environment for a period sufficient to allow the donor nucleus to be reprogrammed;

optionally subjecting the aneuploid cell to an activation step; and

generating a reprogrammed genetically abnormal cell with an equivalent genetic composition to the said abnormal donor cell nucleus from said reprogrammed aneuploid cell by substantial removal or substantial destruction of the recipient cell nucleus, pronucleus, metaphase plate, chromatin, chromosomes or nuclear DNA from said reprogrammed aneuploid cell.

18. (Withdrawn) A method of restoring or improving function of a tissue or organ, said method including

providing

an animal, and

one or more reprogrammed cells according to Claim 1 or derivatives of said cells;

transferring the cells or derivatives thereof to the animal, preferably at or near the site of said tissue or organ; and

allowing the transferred cells or derivatives thereof to repopulate said tissue or organ.

19. (Withdrawn) A method of gene therapy, said method including

providing

an animal, and

one or more genetically modified, reprogrammed cells according to Claim 16 or derivatives of said cells;

transferring the cells or derivatives thereof to the animal; and

allowing said cells or derivatives thereof to repopulate in said animal to provide gene therapy.

20. (Currently Amended) ~~A method according to Claim 1, further including the step of generating one of a group consisting of a cell line, tissue, organ and transgenic mammalian embryo from said reprogrammed diploid mammalian cell, comprising:~~

- (a) preparing a reprogrammed diploid mammalian cell by providing:
one of a group consisting of a diploid mammalian donor cell and a diploid mammalian donor nucleus, and
a mammalian recipient cell, wherein the one of a group consisting of a mammalian donor cell and mammalian donor nucleus is a somatic cell or a nucleus derived therefrom;
introducing the one of a group consisting of a mammalian donor cell and a mammalian donor nucleus into the mammalian recipient cell to produce an aneuploid cell;
maintaining the aneuploid cell in a suitable environment for a period sufficient to allow the donor nucleus to be reprogrammed;
optionally subjecting the aneuploid cell to an activation step;
subsequent to maintaining the aneuploid cell in the suitable environment, treating said reprogrammed aneuploid cell so as to generate a reprogrammed diploid mammalian cell from said reprogrammed aneuploid cell by removal or destruction of the mammalian recipient cell nucleus, pronucleus, metaphase plate, chromatin, chromosomes or nuclear DNA from said reprogrammed aneuploid cell; and
(b) generating one of a group consisting of a cell line, tissue, organ and mammalian embryo from said reprogrammed diploid mammalian cell.

21. (Previously Presented) ~~A method according to Claim 20, further including the step of generating a non-human mammal from said comprising generating a mammalian embryo by a method, comprising:~~

- (a) preparing a reprogrammed diploid mammalian cell by providing:
one of a group consisting of a diploid mammalian donor cell and a diploid mammalian donor nucleus, and

_____ a mammalian recipient cell, wherein the one of a group consisting of a mammalian donor cell and mammalian donor nucleus is a somatic cell or a nucleus derived therefrom;

_____ introducing the one of a group consisting of a mammalian donor cell and a mammalian donor nucleus into the mammalian recipient cell to produce an aneuploid cell;

_____ maintaining the aneuploid cell in a suitable environment for a period sufficient to allow the donor nucleus to be reprogrammed;

_____ optionally subjecting the aneuploid cell to an activation step;

_____ subsequent to maintaining the aneuploid cell in the suitable environment, treating said reprogrammed aneuploid cell so as to generate a reprogrammed diploid mammalian cell from said reprogrammed aneuploid cell by removal or destruction of the mammalian recipient cell nucleus, pronucleus, metaphase plate, chromatin, chromosomes or nuclear DNA from said reprogrammed aneuploid cell;

(b) _____ generating a mammalian embryo from said reprogrammed diploid mammalian cell; and

(c) _____ generating a non-human mammal from said mammalian embryo.

22. (Currently Amended) A method according to Claim 20, wherein the one of a group consisting of a cell, cell line, tissue, organ, and mammalian embryo has been genetically modified to eliminate or reduce an undesirable activity or to provide or increase a desirable activity.

23. (Currently Amended) A method ~~according to Claim 22, further including the step of generating a non-human transgenic mammal from said~~ comprising generating a transgenic mammalian embryo by a method, comprising:

(a) _____ preparing a reprogrammed diploid mammalian cell by providing:

_____ one of a group consisting of a diploid mammalian donor cell and a diploid mammalian donor nucleus, and

_____ a mammalian recipient cell, wherein the one of a group consisting of a mammalian donor cell and mammalian donor nucleus is a somatic cell or a nucleus derived therefrom;

_____ introducing the one of a group consisting of a mammalian donor cell and a mammalian donor nucleus into the mammalian recipient cell to produce an aneuploid cell;

_____ maintaining the aneuploid cell in a suitable environment for a period sufficient to allow the donor nucleus to be reprogrammed;

_____ optionally subjecting the aneuploid cell to an activation step;

_____ subsequent to maintaining the aneuploid cell in the suitable environment, treating said reprogrammed aneuploid cell so as to generate a reprogrammed diploid mammalian cell from said reprogrammed aneuploid cell by removal or destruction of the mammalian recipient cell nucleus, pronucleus, metaphase plate, chromatin, chromosomes or nuclear DNA from said reprogrammed aneuploid cell;

(b) _____ generating a mammalian embryo from said reprogrammed diploid mammalian cell, wherein the mammalian embryo has been genetically modified to eliminate or reduce an undesirable activity or to provide or increase a desirable activity; and

(c) _____ generating a non-human transgenic mammal from said genetically modified embryo.

Claims 24-29 (Cancelled)

30. (Currently Amended) A method of generating ~~an animal~~ a mammalian embryo which method includes providing

a diploid mammalian donor nucleus, and

a mammalian recipient cell, wherein the mammalian donor nucleus is a nucleus derived from a somatic cell; and

introducing the mammalian donor nucleus into to the mammalian recipient cell to produce an aneuploid cell;

optionally subjecting the aneuploid cell to an activation step;

subsequent to maintaining the aneuploid cell in the suitable environment, treating said reprogrammed aneuploid cell so as to generate a reprogrammed diploid mammalian cell from said aneuploid cell by removal or destruction of the mammalian recipient cell nucleus, pronucleus, metaphase plate, chromatin, chromosomes or nuclear DNA from said aneuploid cell; and

generating ~~an animal~~ a mammalian embryo from said reprogrammed diploid cell.

31. (Withdrawn) A method of generating a transgenic animal embryo said method including

providing

a diploid donor nucleus which has been genetically modified to eliminate or reduce an undesirable activity or to provide for, or increase, a desirable activity, and

a recipient cell;

adding the donor nucleus to the recipient cell to produce a genetically modified aneuploid cell;

optionally subjecting the aneuploid cell to an activation step;

generating a reprogrammed diploid cell from said aneuploid cell by substantial removal or substantial destruction of the recipient cell nucleus, pronucleus, metaphase plate, chromatin, chromosomes or nuclear DNA from said aneuploid cell; and

generating a transgenic animal embryo from said reprogrammed diploid cell.

32. (Withdrawn) A method of preparing an aneuploid or reprogrammed diploid cell which method includes

providing

a diploid donor nucleus,

an exogenous nucleic acid molecule, and

a recipient cell;

introducing the donor nucleus and the exogenous nucleic acid molecule into the recipient cell to produce an aneuploid cell; and

optionally generating a reprogrammed diploid cell from said aneuploid cell by substantial removal or substantial destruction of the recipient cell nucleus, pronucleus, metaphase plate, chromatin, chromosomes or nuclear DNA.

33. (Withdrawn) A method of generating a transgenic animal embryo which method includes

providing

a diploid donor nucleus,
an exogenous nucleic acid molecule, and
a recipient cell;

introducing the donor nucleus and the exogenous nucleic acid molecule into the recipient cell to produce an aneuploid cell;

optionally generating a reprogrammed diploid cell from said aneuploid cell by substantial removal or substantial destruction of the recipient cell nucleus, pronucleus, metaphase plate, chromatin, chromosomes or nuclear DNA; and

generating a transgenic animal embryo from the aneuploid or reprogrammed diploid cell.

34. (Currently Amended) A method of preparing a reprogrammed diploid embryonic mammalian cell or embryo which method includes

providing

one of a group consisting of a diploid mammalian donor cell and a diploid mammalian donor cell nucleus, and

one of a group consisting of a recipient mammalian oocyte and an embryonic cell, wherein the one of a group consisting of a mammalian donor cell or a mammalian donor cell nucleus is a somatic cell or derived therefrom;

introducing the mammalian donor cell or mammalian donor cell nucleus into the mammalian recipient oocyte or embryonic cell to produce an aneuploid cell;

maintaining the aneuploid cell in a suitable environment for a period sufficient to allow the mammalian donor cell nucleus to be reprogrammed.

optionally subjecting the aneuploid cell to an activation step; and

subsequent to maintaining the aneuploid cell in the suitable environment, treating said reprogrammed aneuploid cell so as to generate a reprogrammed diploid embryonic mammalian cell or embryo from said reprogrammed aneuploid cell by substantial removal or substantial destruction of the mammalian recipient cell nucleus, pronucleus, metaphase plate, chromatin, chromosomes or nuclear DNA from said reprogrammed aneuploid cell or one or more of its daughter cells.

35. (Currently Amended) A method according to claim 1, wherein the mammalian recipient cell is a human cell.

36. (Currently Amended) A method according to claim 1, wherein the mammalian recipient cell is a mouse cell.

Claims 37 - 40 (Canceled)

41. (Previously Presented) The method according to claim 1, wherein said treating comprises at least one of the group consisting of enucleation by micromanipulation, chemical microsurgery and laser microsurgery.

42. (Previously Presented) The method according to claim 30, wherein said treating comprises at least one of the group consisting of enucleation by micromanipulation, chemical microsurgery and laser microsurgery.

43. (Previously Presented) The method according to claim 34, wherein said treating comprises at least one of the group consisting of enucleation by micromanipulation, chemical microsurgery and laser microsurgery.